



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2015-1266; Directorate Identifier 2014-NM-151-AD]**

**RIN 2120-AA64**

**Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** We propose to adopt a new airworthiness directive (AD) for certain The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-300, 747SR, and 747SP series airplanes. This proposed AD was prompted by an evaluation by the design approval holder (DAH) indicating that certain fuselage skin lap joints are subject to widespread fatigue damage (WFD). This proposed AD would require repetitive post-modification inspections for cracking of the skin or internal doubler along the edge fastener rows of the modification, and repair if necessary. We are proposing this AD to detect and correct fatigue cracking in certain fuselage skin lap joints, which could result in rapid depressurization of the airplane.

**DATES:** We must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this proposed AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221. It is also available on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA 2015-1266.

### **Examining the AD Docket**

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2015-1266; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

**FOR FURTHER INFORMATION CONTACT:** Nathan Weigand, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: 425-917-6428; fax: 425-917-6590; email: [nathan.p.weigand@faa.gov](mailto:nathan.p.weigand@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Comments Invited**

We invite you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2015-1266; Directorate Identifier 2014-NM-151-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

### **Discussion**

Structural fatigue damage is progressive. It begins as minute cracks, and those cracks grow under the action of repeated stresses. This can happen because of normal operational conditions and design attributes, or because of isolated situations or incidents such as material defects, poor fabrication quality, or corrosion pits, dings, or scratches. Fatigue damage can occur locally, in small areas or structural design details, or globally. Global fatigue damage is general degradation of large areas of structure with similar structural details and stress levels. Multiple-site damage is global damage that occurs in a large structural element such as a single rivet line of a lap splice joining two large skin panels. Global damage can also occur in multiple elements such as adjacent frames or stringers. Multiple-site-damage and multiple-element-damage cracks are typically too small initially to be reliably detected with normal inspection methods. Without intervention, these cracks will grow, and eventually compromise the structural integrity of the airplane, in a condition known as WFD. As an airplane ages, WFD will likely

occur, and will certainly occur if the airplane is operated long enough without any intervention.

The FAA's WFD final rule (75 FR 69746, November 15, 2010) became effective on January 14, 2011. The WFD rule requires certain actions to prevent structural failure due to WFD throughout the operational life of certain existing transport category airplanes and all of these airplanes that will be certificated in the future. For existing and future airplanes subject to the WFD rule, the rule requires that DAHs establish a limit of validity (LOV) of the engineering data that support the structural maintenance program. Operators affected by the WFD rule may not fly an airplane beyond its LOV, unless an extended LOV is approved.

The WFD rule (75 FR 69746, November 15, 2010) does not require identifying and developing maintenance actions if the DAHs can show that such actions are not necessary to prevent WFD before the airplane reaches the LOV. Many LOVs, however, do depend on accomplishment of future maintenance actions. As stated in the WFD rule, any maintenance actions necessary to reach the LOV will be mandated by airworthiness directives through separate rulemaking actions.

In the context of WFD, this action is necessary to enable DAHs to propose LOVs that allow operators the longest operational lives for their airplanes, and still ensure that WFD will not occur. This approach allows for an implementation strategy that provides flexibility to DAHs in determining the timing of service information development (with FAA approval), while providing operators with certainty regarding the LOV applicable to their airplanes.

This proposed AD was prompted by an evaluation by the DAH indicating that certain fuselage skin lap joints are subject to WFD. We are proposing this AD to detect and correct fatigue cracking in certain fuselage skin lap joints, which could result in rapid depressurization of the airplane.

### **Related Service Information under 1 CFR part 51**

We reviewed Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014. This service information describes procedures for inspections for cracks in the skin and doublers along the edge fastener rows of modifications in the fuselage, and repairs. Refer to this service information for information on the procedures and compliance times. This service information is reasonably available at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2015-1266. Or see ADDRESSES for other ways to access this service information.

### **Related Rulemaking**

AD 2010-10-05, Amendment 39-16284 (75 FR 27424, May 17, 2010) requires, among other things, modification of certain lap joints in fuselage sections 41 and 42. This proposed AD would require repetitive post-modification inspections for cracking of the skin or internal doubler along the edge fastener rows of the modification, and repair if necessary.

### **FAA's Determination**

We are proposing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of these same type designs.

### **Proposed AD Requirements**

This proposed AD would require accomplishing the actions specified in the service information described previously, except as discussed under "Difference Between this Proposed AD and the Service Information."

### **Difference Between this Proposed AD and the Service Information**

Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014, specifies to contact the manufacturer for instructions on how to repair cracking, but this proposed AD would require repairing those conditions in one of the following ways:

- In accordance with a method that we approve; or
- Using data that meet the certification basis of the airplane, and that have been approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) whom we have authorized to make those findings.

### **Costs of Compliance**

We estimate that this proposed AD affects 50 airplanes of U.S. registry.

We estimate the following costs to comply with this proposed AD:

#### **Estimated costs**

<b>Action</b>	<b>Labor cost</b>	<b>Parts cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Post-modification inspection	124 work-hours X \$85 per hour = \$10,540 per inspection cycle	\$0	\$10,540 per inspection cycle	\$527,000 per inspection cycle

We have received no definitive data that would enable us to provide cost estimates for the on-condition actions specified in this proposed AD.

According to the manufacturer, some of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected individuals. We do not control warranty coverage for affected individuals. As a result, we have included all costs in our cost estimate.

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency’s authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: “General requirements.” Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by

prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

**The Boeing Company:** Docket No. FAA-2014-1266; Directorate Identifier 2014-NM-151-AD.

#### **(a) Comments Due Date**

We must receive comments by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE Federal Register].

#### **(b) Affected ADs**

None.

#### **(c) Applicability**

This AD applies to The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-300, 747SR, and 747SP series airplanes, certificated in any category, as identified in Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014.

#### **(d) Subject**

Air Transport Association (ATA) of America Code 53, Fuselage.

#### **(e) Unsafe Condition**

This AD was prompted by an evaluation by the design approval holder (DAH) indicating that certain fuselage skin lap joints are subject to widespread fatigue damage (WFD). We are issuing this AD to detect and correct fatigue cracking in certain fuselage skin lap joints, which could result in rapid depressurization of the airplane.

#### **(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Repetitive Post-modification Inspections for Airplane Groups 1 through 3, 7, and 8**

For airplanes identified as Groups 1 through 3, 7, and 8 in Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014: Except as provided by paragraph (m) of this AD, at the applicable time specified in table 3 of paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014, do internal detailed and surface high frequency eddy current (HFEC) inspections for cracks in the skin and internal doubler along the edge fastener rows of the modification; in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014. In unrepaired areas, repeat the internal detailed and surface HFEC inspections for cracks in the skin or internal doubler along the edge fastener rows of the modification thereafter at the applicable intervals specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014.

**(h) Initial Post-modification Inspections for Airplane Groups 4 through 6, and 9 through 11**

For airplanes identified as Groups 4 through 6, and 9 through 11 in Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014, with external doublers installed as specified in Boeing Service Bulletin 747-53-2272: Except as provided by paragraph (m) of this AD, at the applicable time specified in table 4 of paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014, do external detailed, low frequency eddy current (LFEC), and HFEC inspections for cracks in the skin and external doubler, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014.

**(i) Repetitive Post-modification Inspections for Airplane Groups 4 through 6, and 9 through 11**

For airplanes with no crack findings during the inspections required by paragraph (h) of this AD: Do the applicable actions required by paragraphs (i)(1) and (i)(2) of this AD.

(1) For airplanes with less than 15,000 flight cycles since stringer 6 external doublers were installed as specified in Boeing Service Bulletin 747-53-2272: At the applicable intervals specified in table 4 of paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014, in unrepairs areas, repeat the external detailed and LFEC inspections for cracks in the skin, and the external detailed and HFEC inspections for cracks in the external doubler, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014.

(2) For airplanes with 15,000 or more flight cycles since the stringer 6 external doublers were installed as specified in Boeing Service Bulletin 747-53-2272: At the applicable intervals specified in table 4 of paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014, in unrepairs areas, do external detailed and LFEC inspections for cracks in the skin; and do internal and external detailed and HFEC inspections for cracks in the skin and external doubler; in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014.

**(j) Repetitive Post-modification Inspections for Airplane Groups 4 through 6, and 9 through 11 with External Doublers**

For airplanes identified as Groups 4 through 6, and 9 through 11 in Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014, with external doublers installed as specified in Boeing Alert Service Bulletin 747-53A2367: Except as provided by paragraph (m) of this AD, at the applicable time specified in table 5 of paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated

July 8, 2014, do internal detailed and surface HFEC inspections for cracks in the skin and internal doubler along the edge fastener rows of the modification; and do internal detailed and surface HFEC inspections for cracks in the skin or internal doubler along the edge fastener rows of the modification; in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014. In unrepaired areas, repeat the internal detailed and surface HFEC inspections for cracks in the skin or internal doubler along the edge fastener rows of the modification thereafter at the applicable interval specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014.

**(k) Repetitive Post-modification Inspections for Airplane Groups 12 and 13**

For airplanes identified as Groups 12 and 13 in Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014: Except as provided by paragraph (m) of this AD, at the applicable time specified in table 6 of paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014, do internal detailed and surface HFEC inspections for cracks in the skin and internal doubler along the edge fastener rows of the modification, in accordance with the Accomplishment Instructions of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014. In unrepaired areas, repeat the internal detailed and surface HFEC inspections for cracks in the skin or internal doubler along the edge fastener rows of the modification thereafter at the applicable interval specified in paragraph 1.E., "Compliance," of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014.

**(l) Corrective Actions**

If any cracking is found during any inspection required by this AD: Before further flight, repair the cracking using a method approved in accordance with the procedures specified in paragraph (n) of this AD.

**(m) Exception to Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014**

Where paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 747-53A2367, Revision 5, dated July 8, 2014, specifies a compliance time “after the Revision 5 date of this service bulletin,” this AD requires compliance within the specified compliance time “after the effective date of this AD.”

**(n) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in paragraph (o)(1) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair required by this AD if it is approved the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO, to make those findings. For a repair method to be approved, the repair must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

**(o) Related Information**

(1) For more information about this AD, contact Nathan Weigand, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue SW., Renton, Washington 98057-3356; phone: 425-917-6428; fax: 425-917-6590; email: [nathan.p.weigand@faa.gov](mailto:nathan.p.weigand@faa.gov).

(2) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Data & Services Management, P. O. Box 3707, MC 2H-65, Seattle, WA 98124-2207; telephone 206-544-5000, extension 1; fax 206-766-5680; Internet <https://www.myboeingfleet.com>. You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425-227-1221.

Issued in Renton, Washington, on April 28, 2015.

Michael Kaszycki,  
Acting Manager,  
Transport Airplane Directorate,  
Aircraft Certification Service.

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